

SEQUENCE LISTING

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Lei, Xiang-Dong

<120> EXPRESSION VECTORS ENCODING EPITOPE OF  
TARGET-ASSOCIATED ANTIGENS AND METHODS FOR THEIR DESIGN

<130> MANNK.022C1

<150> 10/292,413  
<151> 2002-11-07

<150> 60/336,968  
<151> 2001-11-07

<160> 979

<170> FastSEQ for Windows Version 4.0

<210> 1  
<211> 10  
<212> PRT  
<213> Homo Sapien

<400> 1  
Glu Leu Ala Gly Ile Gly Ile Leu Thr Val  
1 5 10 10

<210> 2  
<211> 118  
<212> PRT  
<213> Homo Sapien

<400> 2  
Met Pro Arg Glu Asp Ala His Phe Ile Tyr Gly Tyr Pro Lys Lys Gly  
1 5 10 15  
His Gly His Ser Tyr Thr Thr Ala Glu Glu Ala Ala Gly Ile Gly Ile  
20 25 30  
Leu Thr Val Ile Leu Gly Val Leu Leu Leu Ile Gly Cys Trp Tyr Cys  
35 40 45  
Arg Arg Arg Asn Gly Tyr Arg Ala Leu Met Asp Lys Ser Leu His Val  
50 55 60  
Gly Thr Gln Cys Ala Leu Thr Arg Arg Cys Pro Gln Glu Gly Phe Asp  
65 70 75 80  
His Arg Asp Ser Lys Val Ser Leu Gln Glu Lys Asn Cys Glu Pro Val  
85 90 95  
Val Pro Asn Ala Pro Pro Ala Tyr Glu Lys Leu Ser Ala Glu Gln Ser  
100 105 110  
Pro Pro Pro Tyr Ser Pro  
115

<210> 3  
<211> 529  
<212> PRT  
<213> Homo Sapien

<400> 3  
Met Leu Leu Ala Val Leu Tyr Cys Leu Leu Trp Ser Phe Gln Thr Ser  
1 5 10 15  
Ala Gly His Phe Pro Arg Ala Cys Val Ser Ser Lys Asn Leu Met Glu  
20 25 30  
Lys Glu Cys Cys Pro Pro Trp Ser Gly Asp Arg Ser Pro Cys Gly Gln  
35 40 45  
Leu Ser Gly Arg Gly Ser Cys Gln Asn Ile Leu Leu Ser Asn Ala Pro  
50 55 60  
Leu Gly Pro Gln Phe Pro Phe Thr Gly Val Asp Asp Arg Glu Ser Trp  
65 70 75 80  
Pro Ser Val Phe Tyr Asn Arg Thr Cys Gln Cys Ser Gly Asn Phe Met  
85 90 95  
Gly Phe Asn Cys Gly Asn Cys Lys Phe Gly Phe Trp Gly Pro Asn Cys  
100 105 110  
Thr Glu Arg Arg Leu Leu Val Arg Arg Asn Ile Phe Asp Leu Ser Ala  
115 120 125  
Pro Glu Lys Asp Lys Phe Phe Ala Tyr Leu Thr Leu Ala Lys His Thr  
130 135 140  
Ile Ser Ser Asp Tyr Val Ile Pro Ile Gly Thr Tyr Gly Gln Met Lys  
145 150 155 160  
Asn Gly Ser Thr Pro Met Phe Asn Asp Ile Asn Ile Tyr Asp Leu Phe  
165 170 175  
Val Trp Met His Tyr Tyr Val Ser Met Asp Ala Leu Leu Gly Gly Ser  
180 185 190  
Glu Ile Trp Arg Asp Ile Asp Phe Ala His Glu Ala Pro Ala Phe Leu  
195 200 205  
Pro Trp His Arg Leu Phe Leu Leu Arg Trp Glu Gln Glu Ile Gln Lys  
210 215 220  
Leu Thr Gly Asp Glu Asn Phe Thr Ile Pro Tyr Trp Asp Trp Arg Asp  
225 230 235 240  
Ala Glu Lys Cys Asp Ile Cys Thr Asp Glu Tyr Met Gly Gly Gln His  
245 250 255  
Pro Thr Asn Pro Asn Leu Leu Ser Pro Ala Ser Phe Phe Ser Ser Trp  
260 265 270  
Gln Ile Val Cys Ser Arg Leu Glu Glu Tyr Asn Ser His Gln Ser Leu  
275 280 285  
Cys Asn Gly Thr Pro Glu Gly Pro Leu Arg Arg Asn Pro Gly Asn His  
290 295 300  
Asp Lys Ser Arg Thr Pro Arg Leu Pro Ser Ser Ala Asp Val Glu Phe  
305 310 315 320  
Cys Leu Ser Leu Thr Gln Tyr Glu Ser Gly Ser Met Asp Lys Ala Ala  
325 330 335  
Asn Phe Ser Phe Arg Asn Thr Leu Glu Gly Phe Ala Ser Pro Leu Thr  
340 345 350  
Gly Ile Ala Asp Ala Ser Gln Ser Ser Met His Asn Ala Leu His Ile  
355 360 365  
Tyr Met Asn Gly Thr Met Ser Gln Val Gln Gly Ser Ala Asn Asp Pro  
370 375 380  
Ile Phe Leu Leu His His Ala Phe Val Asp Ser Ile Phe Glu Gln Trp  
385 390 395 400

Leu Arg Arg His Arg Pro Leu Gln Glu Val Tyr Pro Glu Ala Asn Ala  
405 410 415  
Pro Ile Gly His Asn Arg Glu Ser Tyr Met Val Pro Phe Ile Pro Leu  
420 425 430  
Tyr Arg Asn Gly Asp Phe Phe Ile Ser Ser Lys Asp Leu Gly Tyr Asp  
435 440 445  
Tyr Ser Tyr Leu Gln Asp Ser Asp Pro Asp Ser Phe Gln Asp Tyr Ile  
450 455 460  
Lys Ser Tyr Leu Glu Gln Ala Ser Arg Ile Trp Ser Trp Leu Leu Gly  
465 470 475 480  
Ala Ala Met Val Gly Ala Val Leu Thr Ala Leu Leu Ala Gly Leu Val  
485 490 495  
Ser Leu Leu Cys Arg His Lys Arg Lys Gln Leu Pro Glu Glu Lys Gln  
500 505 510  
Pro Leu Leu Met Glu Lys Glu Asp Tyr His Ser Leu Tyr Gln Ser His  
515 520 525  
Leu

<210> 4  
<211> 94  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> pMA2M expression product

<400> 4  
Met Leu Leu Ala Val Leu Tyr Cys Leu Glu Leu Ala Gly Ile Gly Ile  
1 5 10 15  
Leu Thr Val Tyr Met Asp Gly Thr Met Ser Gln Val Gly Ile Leu Thr  
20 25 30  
Val Ile Leu Gly Val Leu Leu Ile Gly Cys Trp Tyr Cys Arg Arg  
35 40 45  
Arg Asn Gly Tyr Arg Ala Leu Met Asp Lys Ser Leu His Val Gly Thr  
50 55 60  
Gln Cys Ala Leu Thr Arg Arg Cys Pro Gln Glu Gly Phe Asp His Arg  
65 70 75 80  
Asp Ser Lys Val Ser Leu Gln Glu Lys Asn Cys Glu Pro Val  
85 90

<210> 5  
<211> 28  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Epitope liberation sequence for SEQ ID NO. 1 from  
pMA2M

<400> 5  
Met Leu Leu Ala Val Leu Tyr Cys Leu Glu Leu Ala Gly Ile Gly Ile  
1 5 10 15  
Leu Thr Val Tyr Met Asp Gly Thr Met Ser Gln Val  
20 25

<210> 6  
<211> 9  
<212> PRT  
<213> Homo Sapien

<400> 6  
Met Leu Leu Ala Val Leu Tyr Cys Leu  
1 5

<210> 7  
<211> 9  
<212> PRT  
<213> Homo Sapien

<400> 7  
Tyr Met Asp Gly Thr Met Ser Gln Val  
1 5

<210> 8  
<211> 10  
<212> PRT  
<213> Homo Sapien

<400> 8  
Glu Ala Ala Gly Ile Gly Ile Leu Thr Val  
1 5 10

<210> 9  
<211> 307  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> pMA2M insert coding region

<400> 9  
cttaagccac catgttacta gctgtttgt actgcctgga actagcaggg atcggcatat 60  
tgacagtgtatatggatgga acaatgtccc aggttaggaat tctgacagtgt atcctggag 120  
tcttactgct catcggttgt tggtattgtatgtaa gaagacgaaa tggatacaga gccttcatgg 180  
ataaaaagtct tcattgttggc actcaatgtg ccttaacaag aagatgccca caagaagggt 240  
tttatcatcg ggacacgaaa gtgtcttttc aagagaaaaa ctgtgaacct gtgttagttag 300  
cggccgc 307

<210> 10  
<211> 85  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Epitope array from pVAXM2 and pVAXM1

<400> 10

Met Val Leu Tyr Cys Leu Glu Leu Ala Gly Ile Gly Ile Leu Thr Val  
 1                   5                   10                   15  
 Tyr Met Asp Gly Thr Ala Val Leu Tyr Cys Leu Glu Leu Ala Gly Ile  
 20                 25                 30  
 Gly Ile Leu Thr Val Tyr Met Asp Gly Thr Met Leu Ala Val Leu Tyr  
 35                 40                 45  
 Cys Leu Glu Leu Ala Gly Ile Gly Ile Leu Thr Val Tyr Met Asp Gly  
 50                 55                 60  
 Thr Met Ser Leu Leu Ala Val Leu Tyr Cys Leu Glu Leu Ala Gly Ile  
 65                 70                 75                 80  
 Gly Ile Leu Thr Val  
 85

<210> 11  
 <211> 180  
 <212> PRT  
 <213> Homo Sapien

<400> 11  
 Met Gln Ala Glu Gly Arg Gly Thr Gly Gly Ser Thr Gly Asp Ala Asp  
 1                 5                 10                 15  
 Gly Pro Gly Gly Pro Gly Ile Pro Asp Gly Pro Gly Gly Asn Ala Gly  
 20                 25                 30  
 Gly Pro Gly Glu Ala Gly Ala Thr Gly Gly Arg Gly Pro Arg Gly Ala  
 35                 40                 45  
 Gly Ala Ala Arg Ala Ser Gly Pro Gly Gly Ala Pro Arg Gly Pro  
 50                 55                 60  
 His Gly Gly Ala Ala Ser Gly Leu Asn Gly Cys Cys Arg Cys Gly Ala  
 65                 70                 75                 80  
 Arg Gly Pro Glu Ser Arg Leu Leu Glu Phe Tyr Leu Ala Met Pro Phe  
 85                 90                 95  
 Ala Thr Pro Met Glu Ala Glu Leu Ala Arg Arg Ser Leu Ala Gln Asp  
 100                 105                 110  
 Ala Pro Pro Leu Pro Val Pro Gly Val Leu Leu Lys Glu Phe Thr Val  
 115                 120                 125  
 Ser Gly Asn Ile Leu Thr Ile Arg Leu Thr Ala Ala Asp His Arg Gln  
 130                 135                 140  
 Leu Gln Leu Ser Ile Ser Ser Cys Leu Gln Gln Leu Ser Leu Leu Met  
 145                 150                 155                 160  
 Trp Ile Thr Gln Cys Phe Leu Pro Val Phe Leu Ala Gln Pro Pro Ser  
 165                 170                 175  
 Gly Gln Arg Arg  
 180

<210> 12  
 <211> 9  
 <212> PRT  
 <213> Homo Sapien

<400> 12  
 Ser Leu Leu Met Trp Ile Thr Gln Cys  
 1                 5

<210> 13

<211> 9  
<212> PRT  
<213> Homo Sapien

<400> 13  
Lys Ala Ser Glu Lys Ile Phe Tyr Val  
1 5

<210> 14  
<211> 9  
<212> PRT  
<213> Homo Sapien

<400> 14  
Thr Gln Cys Phe Leu Pro Val Phe Leu  
1 5

<210> 15  
<211> 10  
<212> PRT  
<213> Homo Sapien

<400> 15  
Gly Leu Pro Ser Ile Pro Val His Pro Ile  
1 5 10

<210> 16  
<211> 6  
<212> PRT  
<213> Homo Sapien

<400> 16  
Ala Val Leu Tyr Cys Leu  
1 5

<210> 17  
<211> 123  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> pN157 expression product

<400> 17  
Met Ser Leu Leu Met Trp Ile Thr Gln Cys Lys Ala Ser Glu Lys Ile  
1 5 10 15  
Phe Tyr Val Arg Cys Gly Ala Arg Gly Pro Glu Ser Arg Leu Leu Glu  
20 25 30  
Phe Tyr Leu Ala Met Pro Phe Ala Thr Pro Met Glu Ala Glu Leu Ala  
35 40 45  
Arg Arg Ser Leu Ala Gln Asp Ala Pro Pro Leu Pro Val Pro Gly Val  
50 55 60  
Leu Leu Lys Glu Phe Thr Val Ser Gly Asn Ile Leu Thr Ile Arg Leu

65               70               75               80  
Thr Ala Ala Asp His Arg Gln Leu Gln Leu Ser Ile Ser Ser Cys Leu  
             85               90               95  
Gln Gln Leu Ser Leu Leu Met Trp Ile Thr Gln Cys Phe Leu Pro Val  
             100              105              110  
Phe Leu Ala Gln Pro Pro Ser Gly Gln Arg Arg  
             115              120

<210> 18  
<211> 19  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Epitope liberation sequence for SEQ ID NO. 12 from  
pN157

<400> 18  
Met Ser Leu Leu Met Trp Ile Thr Gln Cys Lys Ala Ser Glu Lys Ile  
1               5               10               15  
Phe Tyr Val

<210> 19  
<211> 392  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> pN157 insert coding region

<400> 19  
cttaagccac catgtccctg ttgatgtgga tcacgcagtg caaagcttcg gagaaaaatct 60  
tctacgtacg gtgcggtgcc agggggccgg agagccgcct gcttgagttc tacctcgcca 120  
tgcctttcgc gacaccatg gaagcagagc tggcccgag gaggctggcc caggatgccc 180  
caccgcttcc cgtgccaggg gtgcttctga aggagttcac tgtgtccggc aacatactga 240  
ctatccgact gactgctgca gaccaccgccc aactgcagct ctccatcagc tcctgtctcc 300  
agcagcttcc cctgttgatg tggatcacgc agtgcttct gcccgtgttt ttggctcagc 360  
ctccctcagg gcagaggcgc tagtgagaat tc   392

<210> 20  
<211> 179  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> pBPL expression product

<400> 20  
Met Ser Leu Leu Met Trp Ile Thr Gln Cys Lys Ala Ser Glu Lys Ile  
1               5               10               15  
Phe Tyr Val Gly Leu Pro Ser Ile Pro Val His Pro Ile Gly Leu Pro  
20              25              30  
Ser Ile Pro Val His Pro Ile Lys Ala Ser Glu Lys Ile Phe Tyr Val  
35              40              45

<210> 21  
<211> 543  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> pBPL insert coding region

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<400> 21
atgtccctgt tgatgtggat cacgcagtgc aaagcttcgg agaaaaatctt ctatgtgggt 60
cttccaagta ttcctgttca tccaatttgt cttccaagta ttccctgttca tccaattaaa 120
gcttcggaga aaatcttcta tgtgtccctg ttgatgtgga tcacgcagtg caaagcttcg 180
gagaaaaatct tctatgtgaa agcttcggag aaaatcttct acgtacggtg cggtgccagg 240
gggcccggaga gccgcctgct tgagttctac ctcgcctatgc ctttcgcgac acccatggaa 300
gcagagactgg cccgcaggag cctggccccag gatgccccac cgcttccctgt gccaggggtg 360
cttctgaagg agttcactgt gtccggcaac atactgacta tccgactgac tgctgcagac 420
caccgcacaac tgcaagctctc catcaagctcc tgtctccagc agcttccct gttgatgtgg 480
atcacgcagt gcttctgcc cgtgttttg gtcagcctc ctcagggca gagggcgctag 540
tga 543
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<210> 22  
<211> 29  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> liberation sequence for SEO ID NO. 22

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<400> 22
Ile Lys Ala Ser Glu Lys Ile Phe Tyr Val Ser Leu Leu Met Trp Ile
      1           5           10          15
Thr Gln Cys Lys Ala Ser Glu Lys Ile Phe Tyr Val Lys
      20          25

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<210> 23  
<211> 9

<212> PRT  
<213> Homo Sapien

<400> 23  
Val Met Thr Lys Leu Gly Phe Lys Val  
1 5

<210> 24  
<211> 10  
<212> PRT  
<213> Homo Sapien

<400> 24  
Arg Gln Ile Tyr Val Ala Ala Phe Thr Val  
1 5 10

<210> 25  
<211> 169  
<212> PRT  
<213> Homo Sapien

<400> 25  
Ala Gln Ile Pro Glu Lys Ile Gln Lys Ala Phe Asp Asp Ile Ala Lys  
1 5 10 15  
Tyr Phe Ser Lys Glu Glu Trp Glu Lys Met Lys Ala Ser Glu Lys Ile  
20 25 30  
Phe Tyr Val Tyr Met Lys Arg Lys Tyr Glu Ala Met Thr Lys Leu Gly  
35 40 45  
Phe Lys Ala Thr Leu Pro Pro Phe Met Cys Asn Lys Arg Ala Glu Asp  
50 55 60  
Phe Gln Gly Asn Asp Leu Asp Asn Asp Pro Asn Arg Gly Asn Gln Val  
65 70 75 80  
Glu Arg Pro Gln Met Thr Phe Gly Arg Leu Gln Gly Ile Ser Pro Lys  
85 90 95  
Ile Met Pro Lys Pro Ala Glu Glu Gly Asn Asp Ser Glu Glu Val  
100 105 110  
Pro Glu Ala Ser Gly Pro Gln Asn Asp Gly Lys Glu Leu Cys Pro Pro  
115 120 125  
Gly Lys Pro Thr Thr Ser Glu Lys Ile His Glu Arg Ser Gly Pro Lys  
130 135 140  
Arg Gly Glu His Ala Trp Thr His Arg Leu Arg Glu Arg Lys Gln Leu  
145 150 155 160  
Val Ile Tyr Glu Glu Ile Ser Asp Pro  
165

<210> 26  
<211> 245  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> CTLS1/pCBP expression product

<400> 26

Met Val Met Thr Lys Leu Gly Phe Lys Val Lys Ala Ser Glu Lys Ile  
 1 5 10 15  
 Phe Tyr Val Arg Gln Ile Tyr Val Ala Ala Phe Thr Val Gly Leu Pro  
 20 25 30  
 Ser Ile Pro Val His Pro Ile Thr Gln Cys Phe Leu Pro Val Phe Leu  
 35 40 45  
 Val Met Thr Lys Leu Gly Phe Lys Val Arg Gln Ile Tyr Val Ala Ala  
 50 55 60  
 Phe Thr Val Lys Ala Ser Glu Lys Ile Phe Tyr Val Ala Gln Ile Pro  
 65 70 75 80  
 Glu Lys Ile Gln Lys Ala Phe Asp Asp Ile Ala Lys Tyr Phe Ser Lys  
 85 90 95  
 Glu Glu Trp Glu Lys Met Lys Ala Ser Glu Lys Ile Phe Tyr Val Tyr  
 100 105 110  
 Met Lys Arg Lys Tyr Glu Ala Met Thr Lys Leu Gly Phe Lys Ala Thr  
 115 120 125  
 Leu Pro Pro Phe Met Cys Asn Lys Arg Ala Glu Asp Phe Gln Gly Asn  
 130 135 140  
 Asp Leu Asp Asn Asp Pro Asn Arg Gly Asn Gln Val Glu Arg Pro Gln  
 145 150 155 160  
 Met Thr Phe Gly Arg Leu Gln Gly Ile Ser Pro Lys Ile Met Pro Lys  
 165 170 175  
 Lys Pro Ala Glu Glu Gly Asn Asp Ser Glu Glu Val Pro Glu Ala Ser  
 180 185 190  
 Gly Pro Gln Asn Asp Gly Lys Glu Leu Cys Pro Pro Gly Lys Pro Thr  
 195 200 205  
 Thr Ser Glu Lys Ile His Glu Arg Ser Gly Pro Lys Arg Gly Glu His  
 210 215 220  
 Ala Trp Thr His Arg Leu Arg Glu Arg Lys Gln Leu Val Ile Tyr Glu  
 225 230 235 240  
 Glu Ile Ser Asp Pro  
 245

<210> 27  
 <211> 245  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> CTL52 expression product

<400> 27

Met Ala Gln Ile Pro Glu Lys Ile Gln Lys Ala Phe Asp Asp Ile Ala  
 1 5 10 15  
 Lys Tyr Phe Ser Lys Glu Glu Trp Glu Lys Met Lys Ala Ser Glu Lys  
 20 25 30  
 Ile Phe Tyr Val Tyr Met Lys Arg Lys Tyr Glu Ala Met Thr Lys Leu  
 35 40 45  
 Gly Phe Lys Ala Thr Leu Pro Pro Phe Met Cys Asn Lys Arg Ala Glu  
 50 55 60  
 Asp Phe Gln Gly Asn Asp Leu Asp Asn Asp Pro Asn Arg Gly Asn Gln  
 65 70 75 80  
 Val Glu Arg Pro Gln Met Thr Phe Gly Arg Leu Gln Gly Ile Ser Pro  
 85 90 95  
 Lys Ile Met Pro Lys Lys Pro Ala Glu Glu Gly Asn Asp Ser Glu Glu  
 100 105 110

Val	Pro	Glu	Ala	Ser	Gly	Pro	Gln	Asn	Asp	Gly	Lys	Glu	Leu	Cys	Pro
115						120					125				
Pro	Gly	Lys	Pro	Thr	Thr	Ser	Glu	Lys	Ile	His	Glu	Arg	Ser	Gly	Pro
130						135				140					
Lys	Arg	Gly	Glu	His	Ala	Trp	Thr	His	Arg	Leu	Arg	Glu	Arg	Lys	Gln
145						150				155			160		
Leu	Val	Ile	Tyr	Glu	Glu	Ile	Ser	Asp	Pro	Val	Met	Thr	Lys	Leu	Gly
						165				170			175		
Phe	Lys	Val	Lys	Ala	Ser	Glu	Lys	Ile	Phe	Tyr	Val	Arg	Gln	Ile	Tyr
						180				185			190		
Val	Ala	Ala	Phe	Thr	Val	Gly	Leu	Pro	Ser	Ile	Pro	Val	His	Pro	Ile
						195				200			205		
Thr	Gln	Cys	Phe	Leu	Pro	Val	Phe	Leu	Val	Met	Thr	Lys	Leu	Gly	Phe
						210				215			220		
Lys	Val	Arg	Gln	Ile	Tyr	Val	Ala	Ala	Phe	Thr	Val	Lys	Ala	Ser	Glu
225						230				235			240		
Lys	Ile	Phe	Tyr	Val											
						245									

<210> 28  
<211> 208  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> CTL53 expression product

<400> 28															
Met	Val	Met	Thr	Lys	Leu	Gly	Phe	Lys	Val	Lys	Ala	Ser	Glu	Lys	Ile
1															15
Phe	Tyr	Val	Arg	Gln	Ile	Tyr	Val	Ala	Ala	Phe	Thr	Val	Gly	Leu	Pro
															30
Ser	Ile	Pro	Val	His	Pro	Ile	Ala	Gln	Ile	Pro	Glu	Lys	Ile	Gln	Lys
															45
Ala	Phe	Asp	Asp	Ile	Ala	Lys	Tyr	Phe	Ser	Lys	Glu	Glu	Trp	Glu	Lys
															60
Met	Lys	Ala	Ser	Glu	Lys	Ile	Phe	Tyr	Val	Tyr	Met	Lys	Arg	Lys	Tyr
65															80
Glu	Ala	Met	Thr	Lys	Leu	Gly	Phe	Lys	Ala	Thr	Leu	Pro	Pro	Phe	Met
															95
Cys	Asn	Lys	Arg	Ala	Glu	Asp	Phe	Gln	Gly	Asn	Asp	Leu	Asp	Asn	Asp
															110
Pro	Asn	Arg	Gly	Asn	Gln	Val	Glu	Arg	Pro	Gln	Met	Thr	Phe	Gly	Arg
															125
Leu	Gln	Gly	Ile	Ser	Pro	Lys	Ile	Met	Pro	Lys	Lys	Pro	Ala	Glu	Glu
															140
Gly	Asn	Asp	Ser	Glu	Glu	Val	Pro	Glu	Ala	Ser	Gly	Pro	Gln	Asn	Asp
145															160
Gly	Lys	Glu	Leu	Cys	Pro	Pro	Gly	Lys	Pro	Thr	Thr	Ser	Glu	Lys	Ile
															175
His	Glu	Arg	Ser	Gly	Pro	Lys	Arg	Gly	Glu	His	Ala	Trp	Thr	His	Arg
															190
Leu	Arg	Glu	Arg	Lys	Gln	Leu	Val	Ile	Tyr	Glu	Glu	Ile	Ser	Asp	Pro
															205
						195				200					

<210> 29  
<211> 207  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> CTL54 expression product

<400> 29  
Met Ala Gln Ile Pro Glu Lys Ile Gln Lys Ala Phe Asp Asp Ile Ala  
1 5 10 15  
Lys Tyr Phe Ser Lys Glu Glu Trp Glu Lys Met Lys Ala Ser Glu Lys  
20 25 30  
Ile Phe Tyr Val Tyr Met Lys Arg Lys Tyr Glu Ala Met Thr Lys Leu  
35 40 45  
Gly Phe Lys Ala Thr Leu Pro Pro Phe Met Cys Asn Lys Arg Ala Glu  
50 55 60  
Asp Phe Gln Gly Asn Asp Leu Asp Asn Asp Pro Asn Arg Gly Asn Gln  
65 70 75 80  
Val Glu Arg Pro Gln Met Thr Phe Gly Arg Leu Gln Gly Ile Ser Pro  
85 90 95  
Lys Ile Met Pro Lys Lys Pro Ala Glu Glu Gly Asn Asp Ser Glu Glu  
100 105 110  
Val Pro Glu Ala Ser Gly Pro Gln Asn Asp Gly Lys Glu Leu Cys Pro  
115 120 125  
Pro Gly Lys Pro Thr Thr Ser Glu Lys Ile His Glu Arg Ser Gly Pro  
130 135 140  
Lys Arg Gly Glu His Ala Trp Thr His Arg Leu Arg Glu Arg Lys Gln  
145 150 155 160  
Leu Val Ile Tyr Glu Glu Ile Ser Asp Pro Thr Gln Cys Phe Leu Pro  
165 170 175  
Val Phe Leu Val Met Thr Lys Leu Gly Phe Lys Val Arg Gln Ile Tyr  
180 185 190  
Val Ala Ala Phe Thr Val Lys Ala Ser Glu Lys Ile Phe Tyr Val  
195 200 205

<210> 30  
<211> 741  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> pCBP insert coding region

<400> 30  
atggcatga ctaaaacttagg tttcaaggc aaagcttcgg agaaaaatctt ctatgtgaga 60  
cagatttatg ttgcagccct cacagtgggt cttccaagta ttccgttca tccaaattacg 120  
cagtgcttc tgccccgttt tttggcatg actaaaactag gtttcaaggc cagacagatt 180  
tatgttgcag cttcacagt gaaagcttcg gagaaaaatct tctacgtgc tcaaatacca 240  
gagaagatcc aaaaggccctt cgatgatatt gccaaatact tctctaagga agagtggaa 300  
aagatgaaag cctcggagaa aatcttctat gtgtatatga agagaaaatgc tgaggctatg 360  
actaaaactag gtttcaaggc caccctccca cctttcatgt gtaataaacg ggccgaagac 420  
ttcaggggaa atgatttggta taatgaccct aaccgtggaa atcagggttgc acgtccctcag 480  
atgactttcg gcaggctcca gggaatctcc ccgaagatca tgcccaagaa gccagcagag 540  
gaaggaaatg attcggagga agtgccagaa gcatctggcc cacaaaatga tggaaaagag 600  
ctgtgcccccc cgggaaaacc aactacctct gagaagattc acgagagatc tggacccaaa 660

aggggggaac atgcctggac ccacagactg cgtgagagaa aacagctggt gatttatgaa 720  
gagatcagcg acccttagtg a 741

<210> 31  
<211> 28  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> CTLS11-2 liberation/substrate sequence

<400> 31  
Arg Gln Ile Tyr Val Ala Ala Phe Thr Val Lys Ala Ser Glu Lys Ile  
1 5 10 15  
Phe Tyr Val Ala Gln Ile Pro Glu Lys Ile Gln Lys  
20 25

<210> 32  
<211> 9  
<212> PRT  
<213> Homo Sapien

<400> 32  
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<210> 33  
<211> 104  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> CTLT2/pMEL expression product

<400> 33  
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20 25 30  
Tyr Cys Leu Leu Trp Ser Phe Gln Thr Ser Ala Phe Leu Pro Trp His  
35 40 45  
Arg Leu Phe Leu Met Leu Leu Ala Val Leu Tyr Cys Leu Leu Trp Ser  
50 55 60  
Phe Gln Thr Ser Ala Phe Leu Pro Trp His Arg Leu Phe Leu Met Leu  
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85 90 95  
Leu Pro Trp His Arg Leu Phe Leu  
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<210> 34  
<211> 318  
<212> DNA  
<213> Artificial Sequence

<220>

<223> CTLT2/pMEL insert coding region

<400> 34

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<210> 35

<211> 1524

<212> DNA

<213> Homo Sapien

<400> 35

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gacacctgag acatgtgaa attatttctc tcacactttt gcttgaattt aatacagaca 480  
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<210> 36

<211> 1964

<212> DNA

<213> Homo Sapien

<400> 36

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ccagacctcc gctggccatt tcccttagagc ctgtgtctcc tctaagaacc tgatggagaa 180  
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caaccttcatg	ggattcaact	gtggaaactg	caagtttggc	ttttggggac	caaactgcac	420
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<211> 752  
<212> DNA  
<213> Homo Sapien

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gccagttcat tggggggcc tgatttttg tcgctggagg aggacggctt acatgtttgt 720
ttctgttagaa aataaaaactg agctacgaaa aa 752
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<210> 38  
<211> 750  
<212> PRT  
<213> Homo Sapien

<400> 38  
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Pro	His	Leu	Ala	Gly	Thr	Glu	Gln	Asn	Phe	Gln	Leu	Ala	Lys	Gln	Ile
						85				90			95		
Gln	Ser	Gln	Trp	Lys	Glu	Phe	Gly	Leu	Asp	Ser	Val	Glu	Leu	Ala	His
						100				105			110		
Tyr	Asp	Val	Leu	Leu	Ser	Tyr	Pro	Asn	Lys	Thr	His	Pro	Asn	Tyr	Ile
						115				120			125		
Ser	Ile	Ile	Asn	Glu	Asp	Gly	Asn	Glu	Ile	Phe	Asn	Thr	Ser	Leu	Phe
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Glu	Pro	Pro	Pro	Gly	Tyr	Glu	Asn	Val	Ser	Asp	Ile	Val	Pro	Pro	
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Phe	Ser	Ala	Phe	Ser	Pro	Gln	Gly	Met	Pro	Glu	Gly	Asp	Leu	Val	Tyr
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Lys	Ile	Asn	Cys	Ser	Gly	Lys	Ile	Val	Ile	Ala	Arg	Tyr	Gly	Lys	Val
						195				200			205		
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						245				250			255		
Asn	Ile	Leu	Asn	Leu	Asn	Gly	Ala	Gly	Asp	Pro	Leu	Thr	Pro	Gly	Tyr
						260				265			270		
Pro	Ala	Asn	Glu	Tyr	Ala	Tyr	Arg	Arg	Gly	Ile	Ala	Glu	Ala	Val	Gly
						275				280			285		
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						325				330			335		
Phe	Ser	Thr	Gln	Lys	Val	Lys	Met	His	Ile	His	Ser	Thr	Asn	Glu	Val
						340				345			350		
Thr	Arg	Ile	Tyr	Asn	Val	Ile	Gly	Thr	Leu	Arg	Gly	Ala	Val	Glu	Pro
						355				360			365		
Asp	Arg	Tyr	Val	Ile	Leu	Gly	Gly	His	Arg	Asp	Ser	Trp	Val	Phe	Gly
						370				375			380		
Gly	Ile	Asp	Pro	Gln	Ser	Gly	Ala	Ala	Val	Val	His	Glu	Ile	Val	Arg
385						390				395			400		
Ser	Phe	Gly	Thr	Leu	Lys	Glu	Gly	Trp	Arg	Pro	Arg	Arg	Thr	Ile	
						405				410			415		
Leu	Phe	Ala	Ser	Trp	Asp	Ala	Glu	Glu	Phe	Gly	Leu	Leu	Gly	Ser	Thr
						420				425			430		
Glu	Trp	Ala	Glu	Glu	Asn	Ser	Arg	Leu	Leu	Gln	Glu	Arg	Gly	Val	Ala
						435				440			445		
Tyr	Ile	Asn	Ala	Asp	Ser	Ser	Ile	Glu	Gly	Asn	Tyr	Thr	Leu	Arg	Val
						450				455			460		
Asp	Cys	Thr	Pro	Leu	Met	Tyr	Ser	Leu	Val	His	Asn	Leu	Thr	Lys	Glu
465						470				475			480		

Leu	Lys	Ser	Pro	Asp	Glu	Gly	Phe	Glu	Gly	Lys	Ser	Leu	Tyr	Glu	Ser
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Trp	Thr	Lys	Lys	Ser	Pro	Ser	Pro	Glu	Phe	Ser	Gly	Met	Pro	Arg	Ile
			500					505						510	
Ser	Lys	Leu	Gly	Ser	Gly	Asn	Asp	Phe	Glu	Val	Phe	Phe	Gln	Arg	Leu
			515					520					525		
Gly	Ile	Ala	Ser	Gly	Arg	Ala	Arg	Tyr	Thr	Lys	Asn	Trp	Glu	Thr	Asn
			530					535					540		
Lys	Phe	Ser	Gly	Tyr	Pro	Leu	Tyr	His	Ser	Val	Tyr	Glu	Thr	Tyr	Glu
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Leu	Val	Glu	Lys	Phe	Tyr	Asp	Pro	Met	Phe	Lys	Tyr	His	Leu	Thr	Val
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Ala	Gln	Val	Arg	Gly	Gly	Met	Val	Phe	Glu	Leu	Ala	Asn	Ser	Ile	Val
			580					585					590		
Leu	Pro	Phe	Asp	Cys	Arg	Asp	Tyr	Ala	Val	Val	Leu	Arg	Lys	Tyr	Ala
			595					600					605		
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			610					615					620		
Tyr	Ser	Val	Ser	Phe	Asp	Ser	Leu	Phe	Ser	Ala	Val	Lys	Asn	Phe	Thr
			625					630				635		640	
Glu	Ile	Ala	Ser	Lys	Phe	Ser	Glu	Arg	Leu	Gln	Asp	Phe	Asp	Lys	Ser
			645					650					655		
Asn	Pro	Ile	Val	Leu	Arg	Met	Met	Asn	Asp	Gln	Leu	Met	Phe	Leu	Glu
			660					665					670		
Arg	Ala	Phe	Ile	Asp	Pro	Leu	Gly	Leu	Pro	Asp	Arg	Pro	Phe	Tyr	Arg
			675					680					685		
His	Val	Ile	Tyr	Ala	Pro	Ser	Ser	His	Asn	Lys	Tyr	Ala	Gly	Glu	Ser
			690					695					700		
Phe	Pro	Gly	Ile	Tyr	Asp	Ala	Leu	Phe	Asp	Ile	Glu	Ser	Lys	Val	Asp
			705					710				715		720	
Pro	Ser	Lys	Ala	Trp	Gly	Glu	Val	Lys	Arg	Gln	Ile	Tyr	Val	Ala	Ala
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<210> 39  
<211> 2653  
<212> DNA  
<213> Homo Sapien

<400> 39

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cccgccgtgg	tgggtggagg	gcccgcagta	gagcagcagc	acaggcgcgg	gtcccgggag	240
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 <211> 188  
 <212> PRT  
 <213> Homo Sapien

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 Ser Lys Glu Glu Trp Glu Lys Met Lys Ala Ser Glu Lys Ile Phe Tyr  
 35 40 45  
 Val Tyr Met Lys Arg Lys Tyr Glu Ala Met Thr Lys Leu Gly Phe Lys  
 50 55 60  
 Ala Thr Leu Pro Pro Phe Met Cys Asn Lys Arg Ala Glu Asp Phe Gln  
 65 70 75 80  
 Gly Asn Asp Leu Asp Asn Asp Pro Asn Arg Gly Asn Gln Val Glu Arg  
 85 90 95  
 Pro Gln Met Thr Phe Gly Arg Leu Gln Gly Ile Ser Pro Lys Ile Met  
 100 105 110  
 Pro Lys Lys Pro Ala Glu Glu Gly Asn Asp Ser Glu Glu Val Pro Glu  
 115 120 125  
 Ala Ser Gly Pro Gln Asn Asp Gly Lys Glu Leu Cys Pro Pro Gly Lys  
 130 135 140  
 Pro Thr Thr Ser Glu Lys Ile His Glu Arg Ser Gly Pro Lys Arg Gly  
 145 150 155 160

Glu	His	Ala	Trp	Thr	His	Arg	Leu	Arg	Glu	Arg	Lys	Gln	Leu	Val	Ile
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Tyr	Glu	Glu	Ile	Ser	Asp	Pro	Glu	Glu	Asp	Asp	Glu				
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<210> 41  
<211> 766  
<212> DNA  
<213> Homo Sapien

<400> 41  
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catgtgataat aaacggggccg aagacttcca ggggaatgat ttggataatg accctaaccg 360  
tgggaatcg gttgaacgtc ctcagatgac tttcggcagg ctccaggaa tctccccc当地 420  
gatcatgccccc aagaagccag cagaggaagg aaatgattcg gaggaagtgc cagaagcatc 480  
tggcccacaa aatgatggga aagagctgtg cccccc当地 540  
gattcacgag agatctggac cccaaaagggg ggaacatgcc tggaccacca gactgcgtga 600  
gagaaaacag ctggtgattt atgaagagat cagcggaccct gaggaagatg acgagtaact 660  
ccccctcaggg atacgacaca tgcccatgat gagaagcaga acgtgggtgac ctttcacgaa 720  
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<210> 42  
<211> 903  
<212> DNA  
<213> Herpes Simplex Virus

<400> 42  
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gatctgtact acaccccgctc ttcaaggatg gcgagtcccg atagtcgc当地 120  
ccgcgtggcg ccctacagac acgctcgccg cagaggggcg aggtccgtt cgtccagttac 180  
gacgagtcgg attatgcctt ctacggggc tcgtcatccg aagacgacga acacccggag 240  
gtccccccgga cgcggcgtcc cgttccggg gcgggtttgt ccggccccc当地 300  
gcccctccgc caccgcgtgg gtccggaggg gccggacgca caccacccac cgc当地 360  
gccccccgaa cccagccgggt ggcgactaag gccccccgccc cccggcggc ggagaccacc 420  
cgccggcagga aatcgccca gccagaatcc gccgcactcc cagacgcccc cgcgtcgacg 480  
gcgc当地 540  
gc当地 600  
gcccccccaa accccgacgc gccatggacc ccccggtgg cc当地 660  
ttctgc当地 720  
tggacatgt cgc当地 780  
atccgc当地 840  
ccagacgtgg tgcaggacgt cgacgccc当地 900  
cgccccaccg agc当地 903  
gag

<210> 43  
<211> 311  
<212> PRT  
<213> Herpes Simplex Virus

<400> 43  
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Asp Glu Tyr Glu Asp Leu Tyr Tyr Thr Pro Ser Ser Gly Met Ala Ser  
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 Pro Asp Ser Pro Pro Asp Thr Ser Arg Arg Gly Ala Leu Phe Thr Gln  
     35             40                                45  
 Thr Arg Ser Arg Gln Arg Gly Glu Val Arg Phe Val Gln Tyr Asp Glu  
     50             55                                60  
 Ser Asp Tyr Ala Leu Tyr Gly Gly Ser Ser Glu Asp Asp Glu His  
    65             70                                80  
 Pro Glu Val Pro Arg Thr Arg Arg Pro Val Ser Gly Ala Val Leu Ser  
    85             90                                95  
 Gly Pro Gly Pro Ala Arg Ala Pro Pro Pro Phe Thr Pro Ala Gly Ser  
    100            105                              110  
 Gly Gly Ala Gly Arg Thr Pro Thr Ala Pro Arg Ala Pro Arg Thr  
    115            120                              125  
 Gln Arg Val Ala Thr Lys Ala Pro Ala Ala Pro Ala Ala Glu Thr Thr  
    130            135                              140  
 Arg Gly Arg Lys Ser Ala Gln Pro Glu Ser Ala Ala Leu Pro Asp Ala  
   145            150                              160  
 Pro Ala Ser Thr Ala Pro Thr Phe Thr Arg Ser Lys Thr Pro Ala Gln  
    165            170                              175  
 Gly Leu Ala Arg Lys Leu His Phe Ser Thr Ala Pro Pro Asn Pro Asp  
    180            185                              190  
 Ala Pro Trp Thr Pro Arg Val Ala Gly Phe Asn Lys Arg Val Phe Cys  
    195            200                              205  
 Ala Ala Val Gly Arg Leu Ala Ala Met His Ala Arg Met Ala Ala Val  
    210            215                              220  
 Gln Leu Trp Asp Phe Thr Met Ser Arg Pro Arg Thr Asp Glu Asp Leu  
   225            230                              240  
 Asn Glu Leu Leu Gly Ile Thr Thr Ile Arg Val Thr Val Cys Glu Gly  
    245            250                              255  
 Lys Asn Leu Leu Gln Arg Ala Asn Glu Leu Val Asn Pro Asp Val Val  
    260            265                              270  
 Gln Asp Val Asp Ala Ala Thr Ala Thr Arg Gly Arg Ser Ala Ala Ser  
    275            280                              285  
 Arg Phe Thr Pro Thr Glu Arg Pro Arg Ala Pro Ala Arg Ser Ala Ser  
    290            295                              300  
 Arg Pro Arg Arg Pro Val Glu  
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<210> 44  
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 <212> PRT  
 <213> Adenovirus 3

<400> 44  
 Leu Ile Val Ile Gly Ile Leu Ile Leu  
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<210> 45  
 <211> 10  
 <212> PRT  
 <213> Adenovirus 5

<400> 45  
 Ser Gly Pro Ser Asn Thr Pro Pro Glu Ile

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<210> 46  
<211> 8  
<212> PRT  
<213> Adenovirus 5

<400> 46  
Val Asn Ile Arg Asn Cys Cys Tyr  
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<210> 47  
<211> 10  
<212> PRT  
<213> Adenovirus 5

<400> 47  
Ser Gly Pro Ser Asn Ile Pro Pro Glu Ile  
1 5 10

<210> 48  
<211> 9  
<212> PRT  
<213> Classical Swine Fever Virus

<400> 48  
Glu Asn Ala Leu Leu Val Ala Leu Phe  
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<210> 49  
<211> 9  
<212> PRT  
<213> Dengue Virus 4

<400> 49  
Thr Pro Glu Gly Ile Ile Pro Thr Leu  
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<210> 50  
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<212> PRT  
<213> Epstein-Barr Virus

<400> 50  
Cys Leu Gly Gly Leu Leu Thr Met Val  
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<210> 51  
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<212> PRT  
<213> Epstein-Barr Virus

<400> 51  
Asn Ile Ala Glu Gly Leu Arg Ala Leu  
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<210> 52  
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<212> PRT  
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<400> 52  
Asn Leu Arg Arg Gly Thr Ala Leu Ala  
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<210> 53  
<211> 9  
<212> PRT  
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<400> 53  
Ala Leu Ala Ile Pro Gln Cys Arg Leu  
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<211> 9  
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<400> 54  
Val Leu Lys Asp Ala Ile Lys Asp Leu  
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<210> 55  
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<212> PRT  
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<400> 55  
Phe Met Val Phe Leu Gln Thr His Ile  
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<210> 56  
<211> 9  
<212> PRT  
<213> Epstein-Barr Virus

<400> 56  
His Leu Ile Val Asp Thr Asp Ser Leu  
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<210> 57

<211> 9  
<212> PRT  
<213> Epstein-Barr Virus

<400> 57  
Ser Leu Gly Asn Pro Ser Leu Ser Val  
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<210> 58  
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<400> 58  
Pro Leu Ala Ser Ala Met Arg Met Leu  
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<210> 59  
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1 5

<210> 60  
<211> 9  
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<210> 61  
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<400> 61  
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1 5

<210> 62  
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<400> 62  
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1 5

<210> 63  
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<212> PRT  
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<400> 63  
Pro Leu Pro Pro Ala Thr Leu Thr Val  
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<210> 64  
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<400> 64  
Arg Met His Leu Pro Val Leu His Val  
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<210> 65  
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<400> 65  
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<210> 66  
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<400> 66  
Gln Leu Pro Pro Pro Ala Ala Pro Ala  
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<210> 67  
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<400> 67  
Ser Met Pro Glu Leu Ser Pro Val Leu  
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<210> 68  
<211> 9  
<212> PRT  
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<400> 68  
Asp Leu Asp Glu Ser Trp Asp Tyr Ile  
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<210> 69  
<211> 9  
<212> PRT  
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<400> 69  
Pro Leu Pro Cys Val Leu Trp Pro Val  
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<210> 70  
<211> 9  
<212> PRT  
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<400> 70  
Ser Leu Glu Glu Cys Asp Ser Glu Leu  
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<210> 71  
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<400> 71  
Glu Ile Lys Arg Tyr Lys Asn Arg Val  
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<400> 72  
Gln Leu Leu Gln His Tyr Arg Glu Val  
1 5

<210> 73  
<211> 9  
<212> PRT  
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<400> 73  
Leu Leu Gln His Tyr Arg Glu Val Ala  
1 5

<210> 74  
<211> 9

<212> PRT  
<213> Epstein-Barr Virus

<400> 74  
Leu Leu Lys Gln Met Cys Pro Ser Leu  
1 5

<210> 75  
<211> 9  
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<400> 75  
Ser Ile Ile Pro Arg Thr Pro Asp Val  
1 5

<210> 76  
<211> 10  
<212> PRT  
<213> Epstein-Barr Virus

<400> 76  
Leu Leu Asp Phe Val Arg Phe Met Gly Val  
1 5 10

<210> 77  
<211> 9  
<212> PRT  
<213> Epstein-Barr Virus

<400> 77  
Ser Val Arg Asp Arg Leu Ala Arg Leu  
1 5

<210> 78  
<211> 9  
<212> PRT  
<213> Epstein-Barr Virus

<400> 78  
Ile Val Thr Asp Phe Ser Val Ile Lys  
1 5

<210> 79  
<211> 10  
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<400> 79  
Ala Val Phe Asp Arg Lys Ser Asp Ala Lys  
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<210> 81  
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<400> 81  
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<210> 82  
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<400> 82  
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<210> 83  
<211> 9  
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<213> Epstein-Barr Virus

<400> 83  
Glu Pro Asp Val Pro Pro Gly Ala Ile  
1 5

<210> 84  
<211> 9  
<212> PRT  
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<400> 84  
Ile Pro Gln Cys Arg Leu Thr Pro Leu  
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<210> 85  
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<212> PRT  
<213> Epstein-Barr Virus

<400> 85

Gly Pro Gly Pro Gln Pro Gly Pro Leu  
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<210> 86  
<211> 9  
<212> PRT  
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<400> 86  
Gln Pro Gly Pro Leu Arg Glu Ser Ile  
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<210> 87  
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<400> 87  
Arg Pro Gln Lys Arg Pro Ser Cys Ile  
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<210> 88  
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<212> PRT  
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<400> 88  
Pro Pro Thr Pro Leu Leu Thr Val Leu  
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<210> 89  
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<400> 89  
Thr Pro Ser Pro Pro Arg Met His Leu  
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<210> 90  
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<400> 90  
Pro Pro Arg Met His Leu Pro Val Leu  
1 5

<210> 91  
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<400> 91

Val Pro Asp Gln Ser Met His Pro Leu  
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<210> 92

<211> 9

<212> PRT

<213> Epstein-Barr Virus

<400> 92

Pro Pro Ser Ile Asp Pro Ala Asp Leu  
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<210> 93

<211> 9

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<400> 93

Leu Pro Cys Val Leu Trp Pro Val Leu  
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<210> 94

<211> 10

<212> PRT

<213> Epstein-Barr Virus

<400> 94

Cys Pro Ser Leu Asp Val Asp Ser Ile Ile  
1 5 10

<210> 95

<211> 9

<212> PRT

<213> Epstein-Barr Virus

<400> 95

Thr Pro Asp Val Leu His Glu Asp Leu  
1 5

<210> 96

<211> 9

<212> PRT

<213> Epstein-Barr Virus

<400> 96

Phe Leu Arg Gly Arg Ala Tyr Gly Leu  
1 5

<210> 97  
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<212> PRT  
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<400> 97  
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<210> 98  
<211> 9  
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<400> 98  
Ala Tyr Pro Leu His Glu Gln His Gly  
1 5

<210> 99  
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<212> PRT  
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<400> 99  
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1 5

<210> 100  
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<400> 100  
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<210> 101  
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<212> PRT  
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<400> 101  
Arg Arg Ile Tyr Asp Leu Ile Glu Leu  
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<210> 102  
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<212> PRT  
<213> Epstein-Barr Virus

<400> 102  
Tyr Pro Leu His Glu Gln His Gly Met

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<210> 103  
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<400> 103  
Tyr Pro Leu His Glu Gln His Gly Met  
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<210> 104  
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<400> 104  
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<210> 105  
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<212> PRT  
<213> Hepatitis C Virus

<400> 105  
Ala Ser Arg Cys Trp Val Ala Met  
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<210> 106  
<211> 9  
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<400> 106  
Gly Gln Ile Val Gly Gly Val Tyr Leu  
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<210> 107  
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<213> Hepatitis C Virus

<400> 107  
Pro Pro Leu Thr Asp Phe Asp Gln Gly Trp  
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<210> 108  
<211> 10  
<212> PRT  
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<400> 108  
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<210> 109  
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Lys His Pro Asp Ala Thr Tyr Ser Arg  
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<210> 112  
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<210> 113  
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<210> 114

<211> 9  
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<210> 116  
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<400> 116  
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<210> 121  
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<210> 127  
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<210> 129  
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<400> 129  
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<210> 131  
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<212> PRT  
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<400> 131  
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1 5

<210> 132  
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<400> 132  
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<210> 133  
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<400> 135  
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<400> 138  
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<400> 139  
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<210> 140  
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<212> PRT  
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<210> 141  
<211> 9  
<212> PRT  
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<400> 141  
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<210> 142  
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<400> 142

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<210> 143  
<211> 10  
<212> PRT  
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<400> 143  
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<210> 144  
<211> 9  
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<210> 145  
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<400> 145  
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<210> 146  
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<400> 146  
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<210> 147  
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<400> 147  
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<210> 148  
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<213> Human Immunodeficiency Virus 1

<400> 148

Gln Val Pro Leu Arg Pro Met Thr Tyr Lys  
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<400> 149

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<210> 150

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<212> PRT

<213> Human Immunodeficiency Virus 1

<400> 150

Arg Leu Arg Pro Gly Gly Lys Lys Lys  
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<210> 151

<211> 9

<212> PRT

<213> Human Immunodeficiency Virus 1

<400> 151

Val Tyr Tyr Gly Val Pro Val Trp Lys  
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<210> 152

<211> 9

<212> PRT

<213> Human Immunodeficiency Virus 1

<400> 152

Val Pro Leu Arg Pro Met Thr Tyr Lys  
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<210> 153

<211> 9

<212> PRT

<213> Human Immunodeficiency Virus 1

<400> 153

Ala Ile Phe Gln Ser Ser Met Thr Lys  
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<210> 154  
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<400> 154  
Gln Val Pro Leu Arg Pro Met Thr Tyr Lys  
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<210> 155  
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<400> 155  
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1 5 10

<210> 156  
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<400> 156  
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<210> 157  
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<400> 157  
Glu Thr Ile Asn Glu Glu Ala Ala Glu Trp  
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<210> 158  
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<210> 388  
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<210> 405

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Gln Gly Ile Asn Asn Leu Asp Asn Leu  
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<213> Vesicular Stomatitis Virus

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Arg Gly Tyr Val Tyr Gln Gly Leu  
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<210> 409

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<213> Homo Sapiens

<400> 409

Glu Ala Asp Pro Thr Gly His Ser Tyr  
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<210> 410  
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<210> 411  
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Cys Thr Glu Leu Lys Leu Ser Asp Tyr  
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<210> 412  
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<213> Homo Sapien (Calreticulin)

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<210> 425  
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<400> 425  
Lys Leu Val Ala Leu Gly Ile Asn Ala Val  
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<400> 426

Asp Leu Met Gly Tyr Ile Pro Leu Val  
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<210> 427  
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<400> 427  
Arg Leu Val Thr Leu Lys Asp Ile Val  
1 5

<210> 428  
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<400> 428  
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<210> 429  
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<400> 429  
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<210> 430  
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<213> Himetobi P Virus (HiPV)

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<213> Hepatitis C Virus

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<210> 569

<211> 9  
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<213> Human Immunodeficiency Virus 1

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<210> 572  
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<210> 573  
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<210> 574  
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<213> Hepatitis B Virus

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Tyr Val Asn Val Asn Met Gly Leu Lys  
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<210> 575  
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<210> 576  
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<210> 579  
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<210> 584  
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<210> 589  
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<400> 602  
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<213> Homo Sapien

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<223> Xaa = Any Amino Acid

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<211> 10

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<213> Homo Sapien

<400> 604

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<210> 605

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<212> PRT

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<400> 605

Leu Val Glu Val Thr Leu Gly Glu Val  
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<210> 606

<211> 10

<212> PRT

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<400> 606

Val Ile Phe Ser Lys Ala Ser Glu Tyr Leu  
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<212> PRT

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<400> 607

Ile Ile Val Leu Ala Ile Ile Ala Ile  
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<210> 608

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<210> 609  
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<400> 616  
Glu Ala Asp Pro Thr Gly His Ser Tyr  
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<221> VARIANT  
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<223> Xaa = Any Amino Acid

<221> VARIANT  
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<223> Xaa = A or V

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<211> 9  
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<223> Xaa = A or V

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<210> 619  
<211> 9  
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<220>  
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<221> VARIANT  
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<223> Xaa = A or V

<221> VARIANT  
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<223> Xaa = I or A or T

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<210> 620  
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<223> Xaa = I or A or T

<221> VARIANT  
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<223> Xaa = G or S

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<210> 621

<211> 9

<212> PRT

<213> Homo Sapien

<220>

<221> VARIANT

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<223> Xaa = A or V

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<223> Xaa = I or A or T

<221> VARIANT

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<223> Xaa = G or S

<221> VARIANT

<222> 7

<223> Xaa = H or N

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<210> 622

<211> 9

<212> PRT

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<220>

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<221> VARIANT  
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<210> 624  
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<210> 625  
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<400> 625  
Ser Ala Tyr Gly Glu Pro Arg Lys Leu  
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<210> 626  
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<400> 626  
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<210> 627  
<211> 22  
<212> PRT  
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Ala Arg Leu Met Lys Glu  
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<210> 628  
<211> 16  
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<210> 629  
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<210> 630  
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<210> 633  
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<210> 637  
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<210> 639  
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<210> 646  
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<210> 647  
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<210> 649  
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<210> 650

<211> 9  
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<210> 651  
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<210> 655

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<210> 656

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<210> 657

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<400> 657

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<210> 658

<211> 9

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<210> 659  
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<210> 660  
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<210> 662  
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<220>  
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<210> 663  
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<213> Artificial Sequence

<220>

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<400> 663

Gly Ile Leu Gly Phe Glu Phe Thr Leu  
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<210> 664

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic HLA-A2 binding nonamer peptide

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<210> 665

<211> 9

<212> PRT

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<210> 666

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<212> PRT

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<400> 666

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<210> 667

<211> 9

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<210> 670  
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<210> 672  
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<210> 673  
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<210> 674  
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<210> 675  
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<210> 676  
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<210> 677  
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<210> 678  
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<210> 680  
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<210> 681  
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<220>  
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<210> 682  
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<210> 683  
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<400> 683  
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<210> 684  
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Ala Ile Leu Leu Gly Val Phe Met Leu  
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<210> 685  
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<212> PRT  
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<210> 686  
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Ala Leu Phe Phe Phe Asp Ile Asp Leu  
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<210> 687  
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<220>  
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<210> 688  
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<220>  
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Cys Leu Phe Gly Tyr Pro Val Tyr Val  
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<210> 689  
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<220>  
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Phe Ile Phe Pro Asn Tyr Thr Ile Val  
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<210> 690  
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<210> 691  
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<220>  
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<210> 692  
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<210> 694  
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<210> 695  
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<210> 696  
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<210> 697  
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<400> 697  
Leu Met Phe Gly Tyr Pro Val Tyr Val  
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<210> 698  
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<210> 699  
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<210> 700  
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<210> 701  
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<220>  
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<400> 701  
Asn Leu Pro Met Val Ala Thr Val  
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<210> 702  
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<220>  
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<400> 702

Gln Met Leu Leu Ala Ile Ala Arg Leu  
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<210> 703  
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<212> PRT  
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<220>  
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<210> 704  
<211> 9  
<212> PRT  
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<220>  
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<210> 705  
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<220>  
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<210> 706  
<211> 9  
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<220>  
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<210> 707

<211> 9  
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<220>  
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<400> 707  
Thr Leu Asn Ala Trp Val Lys Val Val  
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<210> 708  
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<220>  
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<400> 708  
Trp Leu Tyr Arg Glu Thr Cys Asn Leu  
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<210> 709  
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<212> PRT  
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<220>  
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<400> 709  
Tyr Leu Phe Lys Arg Met Ile Asp Leu  
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<210> 710  
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<220>  
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<400> 710  
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<210> 711  
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<220>

<223> Synthetic HLA-A2 binding nonamer peptide

<400> 711  
Gly Ala Phe Gly Gly Val Gly Gly Tyr  
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<210> 712  
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<400> 712  
Gly Glu Phe Gly Gly Val Gly Gly Val  
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<210> 713  
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<400> 713  
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<210> 714  
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<400> 714  
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<210> 715  
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<220>  
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<210> 716  
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<210> 717  
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<400> 717  
Gly Leu Asp Gly Gly Gly Gly Val  
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<210> 718  
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<220>  
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<400> 718  
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<210> 719  
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<400> 719  
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<210> 720  
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<400> 720

Gly Leu Phe Gly Gly Gly Phe Gly Phe  
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<210> 721

<211> 9

<212> PRT

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<223> Synthetic HLA-A2 binding nonamer peptide

<400> 721

Gly Leu Phe Gly Gly Gly Phe Gly Gly  
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<210> 722

<211> 9

<212> PRT

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<220>

<223> Synthetic HLA-A2 binding nonamer peptide

<400> 722

Gly Leu Phe Gly Gly Gly Phe Gly Asn  
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<210> 723

<211> 9

<212> PRT

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<223> Synthetic HLA-A2 binding nonamer peptide

<400> 723

Gly Leu Phe Gly Gly Gly Phe Gly Ser  
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<210> 724

<211> 9

<212> PRT

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<220>

<223> Synthetic HLA-A2 binding nonamer peptide

<400> 724  
Gly Leu Phe Gly Gly Gly Gly Ile  
1 5

<210> 725  
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<400> 725  
Gly Leu Phe Gly Gly Gly Gly Met  
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<210> 726  
<211> 9  
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<400> 726  
Gly Leu Phe Gly Gly Gly Gly Thr  
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<210> 727  
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<400> 727  
Gly Leu Phe Gly Gly Gly Gly Tyr  
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<210> 728  
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<400> 728  
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<210> 729  
<211> 9  
<212> PRT  
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<220>  
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<400> 729  
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<210> 730  
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<400> 730  
Gly Leu Gly Gly Gly Phe Gly Gly Val  
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<210> 731  
<211> 9  
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<400> 731  
Gly Leu Gly Gly Gly Gly Phe Val  
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<210> 732  
<211> 9  
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<220>  
<223> Synthetic HLA-A2 binding nonamer peptide

<400> 732  
Gly Leu Gly Gly Gly Gly Gly Tyr  
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<210> 733  
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<400> 733  
Gly Leu Gly Gly Gly Val Gly Gly Val  
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<210> 734  
<211> 9  
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<400> 734  
Gly Leu Leu Gly Gly Gly Gly Val  
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<210> 735  
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<220>  
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<400> 735  
Gly Leu Pro Gly Gly Gly Gly Val  
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<210> 736  
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<220>  
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<210> 737  
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<400> 737  
Gly Ser Phe Gly Gly Val Gly Gly Val

<210> 738  
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<212> PRT  
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<220>  
<223> Synthetic HLA-A2 binding nonamer peptide

<400> 738  
Gly Thr Phe Gly Gly Val Gly Gly Val  
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<210> 739  
<211> 9  
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<220>  
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<400> 739  
Ala Gly Asn Ser Ala Tyr Glu Tyr Val  
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<210> 740  
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Gly Leu Phe Pro Gly Gln Phe Ala Tyr  
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<210> 741  
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<212> PRT  
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<220>  
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His Ile Leu Leu Gly Val Phe Met Leu  
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<210> 742  
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<212> PRT  
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<220>  
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<210> 743  
<211> 9  
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<220>  
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<400> 743  
Lys Lys Lys Tyr Lys Leu Lys His Ile  
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<210> 744  
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<220>  
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<400> 744  
Met Leu Ala Ser Ile Asp Leu Lys Tyr  
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<210> 745  
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<212> PRT  
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<220>  
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<400> 745  
Met Leu Glu Arg Glu Leu Val Arg Lys  
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<210> 746  
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<220>  
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<400> 746  
Lys Leu Phe Gly Phe Val Phe Thr Val  
1 5

<210> 747  
<211> 9  
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<220>  
<223> Synthetic HLA-A2 binding nonamer peptide

<400> 747  
Ile Leu Asp Lys Lys Val Glu Lys Val  
1 5

<210> 748  
<211> 9  
<212> PRT  
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<220>  
<223> Synthetic HLA-A2 binding nonamer peptide

<400> 748  
Ile Leu Lys Glu Pro Val His Gly Val  
1 5

<210> 749  
<211> 9  
<212> PRT  
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<220>  
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<400> 749  
Ala Leu Phe Ala Ala Ala Ala Tyr  
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<210> 750  
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<212> PRT  
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<220>  
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<400> 750  
Gly Ile Gly Phe Gly Gly Gly Leu  
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<210> 751  
<211> 9  
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<220>  
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<400> 751  
Gly Lys Phe Gly Gly Val Gly Gly Val  
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<210> 752  
<211> 9  
<212> PRT  
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<220>  
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<400> 752  
Gly Leu Phe Gly Gly Gly Gly Lys  
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<210> 753  
<211> 9  
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<220>  
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<400> 753  
Glu Ile Leu Gly Phe Val Phe Thr Leu  
1 5

<210> 754  
<211> 9  
<212> PRT  
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<220>  
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<400> 754  
Gly Ile Lys Gly Phe Val Phe Thr Leu  
1 5

<210> 755  
<211> 9  
<212> PRT  
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<220>  
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Gly Gln Leu Gly Phe Val Phe Thr Lys  
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<210> 756  
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<220>  
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Ile Leu Gly Phe Val Phe Thr Leu Thr  
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<210> 757  
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<220>  
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Lys Ile Leu Gly Phe Val Phe Thr Lys  
1 5

<210> 758  
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<212> PRT  
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<220>  
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<400> 758  
Lys Lys Leu Gly Phe Val Phe Thr Leu  
1 5

<210> 759  
<211> 9  
<212> PRT  
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<220>  
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<400> 759

Lys Leu Phe Glu Lys Val Tyr Asn Tyr  
1 5

<210> 760  
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<212> PRT  
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<220>  
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<400> 760  
Leu Arg Phe Gly Tyr Pro Val Tyr Val  
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<210> 761  
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<400> 761  
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1 5

<210> 762  
<211> 9  
<212> PRT  
<213> Homo Sapien

<400> 762  
Lys Arg Ile Gln Glu Ile Ile Glu Gln  
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<210> 763  
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<212> PRT  
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<400> 763  
Lys Arg Thr Leu Lys Ile Pro Ala Met  
1 5

<210> 764  
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<400> 764  
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<210> 765  
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<212> PRT  
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<400> 765  
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1 5

<210> 766  
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<400> 766  
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1 5

<210> 767  
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<212> PRT  
<213> Yersenia Pestis

<400> 767  
Arg Arg Lys Ala Met Phe Glu Asp Ile  
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<210> 768  
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<213> Plasmodium Falciparum

<400> 768  
Lys Pro Lys Asp Glu Leu Asp Tyr  
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<210> 769  
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<212> PRT  
<213> Influenza

<400> 769  
Leu Glu Leu Arg Ser Arg Tyr Trp Ala  
1 5

<210> 770  
<211> 10  
<212> PRT  
<213> Homo Sapien

<400> 770  
Gly Pro Pro His Ser Asn Asn Phe Gly Tyr

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<210> 771  
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<212> PRT  
<213> Rotavirus

<400> 771  
Ile Ile Tyr Arg Phe Leu Leu Ile  
1 5

<210> 772  
<211> 9  
<212> PRT  
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<400> 772  
Gln Leu Ser Pro Tyr Pro Phe Asp Leu  
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<210> 773  
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<212> PRT  
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<400> 773  
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1 5

<210> 774  
<211> 8  
<212> PRT  
<213> Homo Sapien

<400> 774  
Ser Asn Phe Val Phe Ala Gly Ile  
1 5

<210> 775  
<211> 8  
<212> PRT  
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<400> 775  
Ser Val Val Glu Phe Ser Ser Leu  
1 5

<210> 776  
<211> 8  
<212> PRT  
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<220>  
<223> Epitope mimic of natural tumor Ag

<400> 776  
Ala His Tyr Leu Phe Arg Asn Leu  
1 5

<210> 777  
<211> 8  
<212> PRT  
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<220>  
<223> Epitope mimic of natural tumor Ag

<400> 777  
Thr His Tyr Leu Phe Arg Asn Leu  
1 5

<210> 778  
<211> 8  
<212> PRT  
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<220>  
<223> Epitope Mimic of H-3 miHAg

<400> 778  
Leu Ile Val Ile Tyr Asn Thr Leu  
1 5

<210> 779  
<211> 8  
<212> PRT  
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<220>  
<223> Epitope Mimic of H-3 miHAg

<400> 779  
Leu Ile Tyr Glu Phe Asn Thr Leu  
1 5

<210> 780  
<211> 8  
<212> PRT  
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<220>  
<223> Epitope Mimic of H-3 miHAg

<400> 780

Ile Pro Tyr Ile Tyr Asn Thr Leu  
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<210> 781  
<211> 8  
<212> PRT  
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<220>  
<223> Epitope Mimic of H-3 miHAg

<400> 781  
Ile Ile Tyr Ile Tyr His Arg Leu  
1 5

<210> 782  
<211> 8  
<212> PRT  
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<220>  
<223> Epitope Mimic of H-3 miHAg

<400> 782  
Leu Ile Tyr Ile Phe Asn Thr Leu  
1 5

<210> 783  
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<213> Hepatitis B Virus

<400> 783  
Met Gly Leu Lys Phe Arg Gln Leu  
1 5

<210> 784  
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<212> PRT  
<213> Homo Sapien

<400> 784  
Ile Met Ile Lys Phe Arg Asn Arg Leu  
1 5

<210> 785  
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<212> PRT  
<213> Mus Musculus

<400> 785  
Trp Met His His Asn Met Asp Leu Ile

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<210> 786  
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<212> PRT  
<213> Mus Musculus

<400> 786  
Lys Tyr Met Cys Asn Ser Ser Cys Met  
1 5

<210> 787  
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<212> PRT  
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<400> 787  
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<400> 921  
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<210> 923  
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<212> PRT  
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<400> 923  
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<210> 924  
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<400> 925  
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<210> 926  
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<400> 926  
Glu Glu Asn Leu Leu Asp Phe Val Arg Phe  
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<210> 927  
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<212> PRT  
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<400> 927  
Glu Ala Ala Gly Ile Gly Ile Leu Thr Val  
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<210> 928  
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<212> PRT  
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<400> 928  
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<400> 931  
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Gly Ile Leu Gly Phe Val Phe Thr Leu  
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<210> 933  
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<400> 933  
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<400> 934

Glu Ala Asp Pro Thr Gly His Ser Tyr  
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Ala Arg Leu Met Lys Glu  
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<212> PRT  
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<400> 936

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<210> 937

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<212> PRT  
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<400> 937

Ala Ala Arg Ala Val Phe Leu Ala Leu  
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<210> 938

<211> 9  
<212> PRT  
<213> Influenza

<400> 938

Ile Tyr Gln Arg Ile Arg Ala Leu Val  
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<210> 939

<211> 9  
<212> PRT  
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<400> 939

Ser Tyr Phe Pro Glu Ile Thr His Ile  
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<210> 940  
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<212> PRT  
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Ile Tyr Ala Thr Val Ala Gly Ser Leu  
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<210> 941  
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<212> PRT  
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Val Tyr Gln Ile Leu Ala Ile Tyr Ala  
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<210> 943  
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<212> PRT  
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<400> 944  
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<210> 945  
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<400> 945

Arg Tyr Leu Lys Asn Gly Lys Glu Thr  
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<210> 946  
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<212> PRT  
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<400> 946  
Lys Tyr Gln Ala Val Thr Thr Thr Leu  
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<210> 947  
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<400> 947  
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<210> 948  
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<213> Plasmodium Yoelii

<400> 948  
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<210> 949  
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<212> PRT  
<213> Vesicular Stomatitis Virus

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<210> 950  
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<212> PRT  
<213> Gallus Domesticus

<400> 950  
Ser Ile Ile Asn Phe Glu Lys Leu  
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<210> 951  
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<212> PRT

<213> Sendai Virus

<400> 951

Ala Pro Gly Asn Tyr Pro Ala Leu  
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<210> 952

<211> 9

<212> PRT

<213> Homo Sapien

<400> 952

Val Pro Tyr Gly Ser Phe Lys His Val  
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<210> 953

<211> 9

<212> PRT

<213> Influenza

<400> 953

Thr Tyr Gln Arg Thr Arg Ala Leu Val  
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<210> 954

<211> 9

<212> PRT

<213> Homo Sapien

<400> 954

Ser Tyr Phe Pro Glu Ile Thr His Ile  
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<210> 955

<211> 9

<212> PRT

<213> Influenza

<400> 955

Ile Tyr Ala Thr Val Ala Gly Ser Leu  
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<210> 956

<211> 9

<212> PRT

<213> Influenza

<400> 956

Val Tyr Gln Ile Leu Ala Ile Tyr Ala  
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<400> 957  
Ile Tyr Ser Thr Val Ala Ser Ser Leu  
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<210> 958  
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<400> 958  
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<210> 959  
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<400> 959  
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<210> 960  
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<210> 962  
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<210> 963  
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<400> 963  
Ser Tyr Val Pro Ser Ala Glu Gln Ile  
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<210> 964  
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<212> PRT  
<213> Influenza

<400> 964  
Ala Ser Asn Glu Asn Met Glu Thr Met  
1 5

<210> 965  
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<213> Adenovirus

<400> 965  
Ser Gly Pro Ser Asn Thr Pro Pro Glu Ile  
1 5 10

<210> 966  
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<212> PRT  
<213> Lymphocytic Choriomeningitis Virus

<400> 966  
Ser Gly Val Glu Asn Pro Gly Gly Tyr Cys Leu  
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<210> 967  
<211> 9  
<212> PRT  
<213> Simian Virus

<220>  
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<222> 7, 8, 9  
<223> Xaa = Any Amino Acid

<400> 967  
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<210> 968  
<211> 9  
<212> PRT  
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<400> 968  
Ile Leu Lys Glu Pro Val His Gly Val  
1 5

<210> 969  
<211> 9  
<212> PRT  
<213> Influenza

<400> 969  
Gly Ile Leu Gly Phe Val Phe Thr Leu  
1 5

<210> 970  
<211> 10  
<212> PRT  
<213> Influenza

<400> 970  
Ile Leu Gly Phe Val Phe Thr Leu Thr Val  
1 5 10

<210> 971  
<211> 9  
<212> PRT  
<213> Human Immunodeficiency Virus

<400> 971  
Phe Leu Gln Ser Arg Pro Glu Pro Thr  
1 5

<210> 972  
<211> 9  
<212> PRT  
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<220>  
<221> VARIANT  
<222> 8, 9  
<223> Xaa = Any Amino Acid

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<210> 973

<211> 9  
<212> PRT  
<213> Human Immunodeficiency Virus

<400> 973  
Pro Ile Ala Pro Gly Gln Met Arg Glu  
1 5

<210> 974  
<211> 9  
<212> PRT  
<213> Human Immunodeficiency Virus

<400> 974  
Gln Met Lys Asp Cys Thr Glu Arg Gln  
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<210> 975  
<211> 7  
<212> PRT  
<213> Human Immunodeficiency Virus

<400> 975  
Val Tyr Gly Val Ile Gln Lys  
1 5

<210> 976  
<211> 12  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic HLA-A2 binding nonamer peptide

<400> 976  
Ser Asp Leu Arg Gly Tyr Val Tyr Gln Gly Leu Lys  
1 5 10

<210> 977  
<211> 15  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Epitope mimic of natural tumor Ag

<400> 977  
Arg Pro Gln Ala Ser Gly Val Tyr Met Gly Asn Leu Thr Thr Gln  
1 5 10 15

<210> 978  
<211> 9

<212> PRT  
<213> Artificial Sequence

<220>  
<223> Epitope mimic of natural tumor Ag

<400> 978  
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<210> 979  
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<212> PRT  
<213> Homo Sapien

<400> 979  
Glu Val Asp Pro Ala Ser Asn Thr Tyr  
1                      5